

# PATENT SPECIFICATION

630,784



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## PROVISIONAL SPECIFICATION

### Improvements in Hose-End Fittings

I, EDWARD CHARLES CARLSON, of Southampton Road, Salisbury, Wiltshire, British subject, do hereby declare the nature of this invention to be as follows:

This invention relates to hose-end fittings.

At the present time when a hose-end or its fitting becomes unserviceable it is a common practice to replace the entire length of hose by a fresh length and new fittings; the fittings are applied by special equipment at the hose-fitting factory and it is generally cheaper and quicker to replace the entire hose and fittings than to apply fresh end fittings to the old hose.

The main object of this invention is to provide such an arrangement of hose-end fitting that the user himself can readily apply the end fitting himself and so enable operating costs to be reduced and time saved in attending to breakages.

According to one feature of this invention a hose-end fitting comprises a sleeve to fit over the hose end and an insert to fit into the bore of the hose end; the insert is formed with a screw thread which may be so disposed as to enter the bore of the hose and the sleeve itself is formed as a cup-like shell having at its base an opening, the metal about which is pressed out to a helical form to engage the thread on the insert so that the insert having been forced into the hose, the sleeve can be forced over the outer surface of the hose end by screwing it on to the insert during which operation it is drawn on to the hose.

The thread on the insert engaged by the sleeve may be an extension of a thread on the insert to provide for screwing the insert into the bore of the hose.

If desired the sleeve may be formed in the manner described and claimed in the co-pending application No. 3623/46 with tongues or tags which can be pressed into the hose to afford further security.

[Price 2/-]

The inner surface of the sleeve may be roughened, toothed, or formed with a screw thread to "bite" into the outer surface of the rubber of the hose.

The outer end of the insert would be formed with any usual male or female coupling end and as is necessary a nut 55 or other device for drawing the two parts together.

In certain cases, the screwing-on operation would be sufficient to secure the fitting to the hose end but in the majority of cases it would be necessary, having screwed the sleeve and insert into position, to contract the sleeve as by a swaging operation. To enable the user of the apparatus himself to complete the fitting operation there is provided according to a further feature of the invention a tool which comprises merely a frame having opposed limbs one of which is formed with a swaging bore (or with a replaceable swaging ring) while the other limb is provided with a pressure component to apply force to the hose-end assembly to force it through the swaging bore to contract the sleeve on to the hose and so secure it.

The pressure component may comprise a screw which is screwed into the other limb of the frame or it may be slidable in that limb so that an external screw arrangement (e.g. a screw-vice) could be employed to force the pressure component.

The frame may be of U-shape the extremity of one limb of which is formed to receive a "pressure head" the inner end of which is formed to engage and apply the requisite end pressure to the assembly as has been described. The swaging bore is formed in the extremity of the other limb of the U and is of course in register with the pressure head.

This tool is obviously simple to use and is well adapted for use by the user of the hose. The invention enables a user, when a hose end requires replacement, to

cut back the end of the hose and easily to refurnish the fresh end with an end fitting with the obvious advantage of low servicing and maintenance costs and speedy repair.

Dated this 1st day of February, 1946.

R. F. COWLING,  
Chartered Patent Agent,  
Bank Chambers, 329, High Holborn,  
London, W.C.1.

## COMPLETE SPECIFICATION

### Improvements in Hose-End Fittings

I, EDWARD CHARLES CARLING, of Southampton Road, Salisbury, Wiltshire, British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to hose-end fittings.

At the present time when a hose-end or its fitting becomes unserviceable it is a common practice to replace the entire length of hose by a fresh length and new fittings; the fittings are applied by special equipment at the hose-fitting factory and it is generally cheaper and quicker to replace the entire hose and fittings than to apply fresh end fittings to the old hose.

The main object of this invention is to provide such an arrangement of hose-end fitting such that the user can readily apply the end fitting himself and so enable operating costs to be reduced and time saved in attending to breakages.

According to the present invention a hose-end fitting comprises a metal sleeve and an insert, the insert is screwed to fit into the bore in a hose and the sleeve is in the form of a cup having in its base an opening the metal about which is pressed out to form a thread to engage that of the insert whereby the insert having been screwed into the bore of the hose, the sleeve can be drawn firmly over the hose end by screwing it on the insert.

Preferably the hose engaging surface of the sleeve is itself formed with a screw thread to assist in the screwing-on operation.

The invention also contemplates a sleeve component for use in a hose end fitting, the said component being formed to fit over the end of a hose and being in the shape of a cup in the base of which is an aperture, the metal about which is pressed out to form a screw thread to engage a thread on an insert component itself to be screwed into the bore of a hose, and the inner cylindrical surface of the sleeve, i.e. the hose-engaging surface is itself provided with a screw thread.

If desired the sleeve may be formed in the manner described and claimed in the

co-pending application No. 3633/46 with 60 tongues or tags which can be pressed into the hose to afford further security.

In the majority of cases it would be necessary, having screwed the sleeve and insert into position, to contract the sleeve 65 as by a swaging operation. To enable the user of the apparatus himself to complete the fitting operation there can be provided a tool which comprises merely a frame having opposed limbs one of which 70 is formed with a swaging bore (or with a replaceable swaging ring) while the other limb is provided with a pressure component to apply force to the hose end assembly to force it through the swaging bore to contract the sleeve on to the hose 75 and so secure it.

The invention is illustrated in the accompanying drawing in which figure 1 is a longitudinal section of a hose end and applied end fitting, and figure 2 is a perspective view showing the two parts of the end fitting removed from the hose and separated from one another; figure 3 is a sectional elevation of a tool for use 80 in a stage in the operation of fitting the end fitting to the hose end and figure 4 is a sectional elevation showing a modified form of tool in use.

Referring firstly to figures 1 and 2, a 80 flexible hose 1 is shown with an applied end fitting comprising an insert 2 and a sleeve 3; the insert extends into the bore of the hose and is formed with one component 4 of a pipe coupling and has fitted 85 to it a coupling nut 5. The shank part 6 of the insert 2 is screw-threaded as is shown, the outside diameter of the thread being such that it can be screwed into the bore of the hose.

The sleeve 3 is in the form of a cup having a base wall 7 in which is formed an aperture the metal about which is formed into a helix to mate with the thread on the shank 6 of the insert 2. 105

Hence, the insert 2 having been screwed into the bore of the hose 1, then by screwing the sleeve 3 on the insert, the sleeve will be forced over the hose. The threaded length of the insert may be such 110 that it can be screwed into the hose for a distance approximating to the length of the sleeve 3 before the sleeve com-

menances to pass on to the hose; in general this would not be necessary, the proportions shown being sufficient to obtain satisfactory results by first screwing the sleeve 3 back on the insert 2 up to the end of the thread adjacent the coupling component so that the insert has a lead over the end of the sleeve; the insert is screwed into the hose until the sleeve commences to pass over the hose end whereupon the insert and sleeve are turned together so that the bite already obtained on the hose by the insert serves to draw the parts respectively into and over the hose; finally the sleeve is turned on the insert to complete the assembly, the rubber or other material of the hose having in the fitting operation become firmly trapped between the insert and sleeve.

The inner cylindrical surface of the sleeve can be serrated as is indicated at 8 and preferably the serrations are of helical formation of the same pitch as the threads on the insert to assist in the screwing-on of the sleeve to the hose end: the serrations are of buttress form so that they will present considerable resistance to the blowing or pulling-off of the end fitting by penetration distortion of the hose itself.

The securing operation described would be sufficient to certain light-duty work especially if, as is described and claimed in the pending application No. 3633/46, the sleeve 3 is pre-formed with tongues or tabs 9 which, as shown in figure 1, are pressed into the hose 1 after the sleeve has been fitted as described.

In other cases however, it may be desirable to contract the sleeve 3 so as to increase between itself and the insert the grip exerted on the rubber. For this purpose, the tool shown in figure 3 or figure 4, can be used; this tool comprises a U frame 10 having in one limb a "pressure head" 11 the inner end of which is formed to engage and apply the requisite end pressure to the assembly as has been described. The other limb has a swaging bore 12 in register with the pressure head.

The pressure head 11 may as shown in figure 3 be operated by a screw 12 which is screwed into the first limb of the frame or it may as shown in figure 4 be formed on a bar 13 slidable in that limb so that an external screw arrangement (e.g. a screw-vice as shown) could be employed to form the pressure component.

This tool is obviously simple to use and is well adapted for use by the user of the hose.

The invention enables a user, when a hose-end requires replacement, to cut back the end of the hose and easily to refurnish the fresh end with an end fitting, with the obvious advantage of low servicing and maintenance costs and speedy repair. The end of the hose is passed up through the bore 12 and the sleeve 3 and insert 6 with its coupling nut are applied, the head 11 being recessed to receive the nut.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A hose end fitting comprising a metal sleeve and insert, and wherein the insert is screw-threaded to screw into the bore of a hose and the sleeve is in the form of a cup having in its base an opening about which the metal is pressed out to form a thread to engage that on the insert whereby the sleeve can be forced on to a hose end by screwing the sleeve on the insert.

2. A fitting as claimed in claim 1 and the sleeve of which is formed at its hose-engaging surface with a screw thread.

3. For use in a hose end fitting, a sleeve component to fit over the end of the hose and in the form of a cup in the base of which is an aperture the metal bounding which is pressed out to form a screw-thread to engage a thread on an insert component, the inner cylindrical surface of the sleeve being also provided with a screw-thread for the purpose described.

4. A hose end fitting as claimed in claim 1 or 2 or a sleeve component as claimed in claim 3 and wherein the sleeve is formed with tongues or tabs to be pressed into a hose after the sleeve is fitted to it.

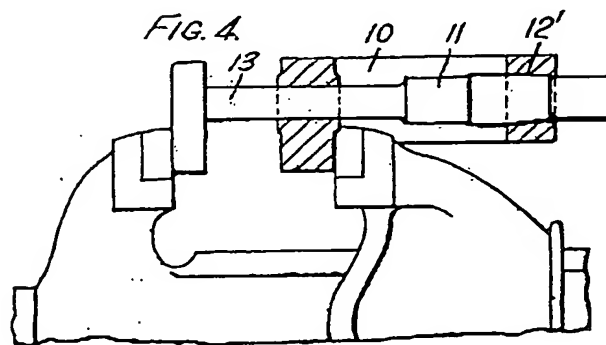
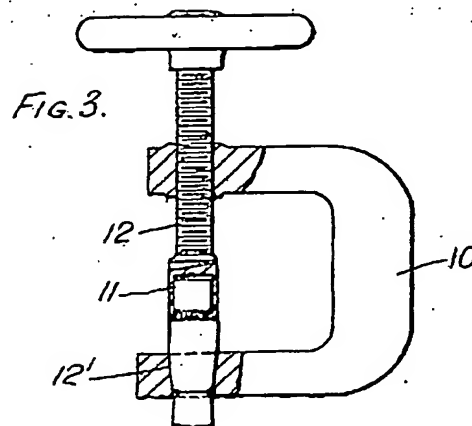
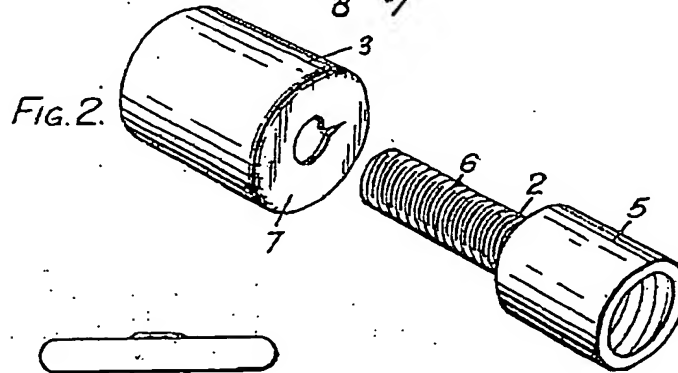
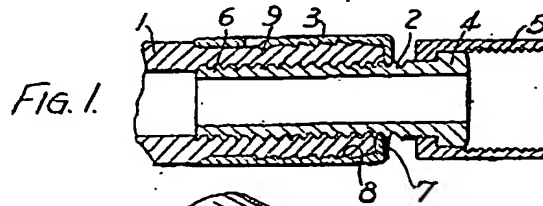
5. A hose and end fitting substantially as described with reference to figures 1 and 2.

6. For hose end fittings, a sleeve component substantially as described with reference to figures 1 and 2.

Dated this third day of February, 1947.

R. F. COWLING,  
Chartered Patent Agent,  
Bank Chambers, 329, High Holborn,  
London, W.C.1.

[This Drawing is a reproduction of the Original on a reduced scale.]



H. M. S. O. (Ty. P.)

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